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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
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07/15/96 SCHMIDT

W SE10-0108

EXAMINER

IM41/0914

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LEADER, W ART UNIT	PAPER NUMBER
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1741

DATE MAILED: 09/14/98

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☒ Responsive to communication(s) filed on 4/6/98

☐ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-39 is/are pending in the application.
Of the above, claim(s) 32-39 is/are withdrawn from consideration.
☐ Claim(s) is/are allowed.
☒ Claim(s) 1-31 is/are rejected.
☐ Claim(s) is/are objected to.
☐ Claim(s) are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
☐ The drawing(s) filed on is/are objected to by the Examiner.
☐ The proposed drawing correction, filed on is ☐ approved ☐ disapproved.
☐ The specification is objected to by the Examiner.
☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.
☐ received in Application No. (Series Code/Serial Number)
☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received:

- ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of Reference Cited, PTO-892
☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) S
☐ Interview Summary, PTO-413
☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
☐ Notice of Informal Patent Application, PTO-152

—SEE OFFICE ACTION ON THE FOLLOWING PAGES—

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Applicant's election of Group I, claims 1-31 in Paper No. 8, filed on April 6, 1998, is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 32-39 are withdrawn from consideration.

The disclosure is objected to because of the following informalities:

page 20, line "a" should be --an--;

page 21, line 3 refers to "pump suction 640"; it appears that "640" should be "647" as in line 2;

page 21, line 21 refers to "outlet filter 651"; figure 6 shows that outlet filter as number 650; however, figure 6 also shows the electric motor as 650; the duplicate use of 650 in figure 6 should be corrected;

page 50, line 5 refers to line 3-3 in figure 24; figure 24 shows line 25-25 rather than line 3-3.

Appropriate correction is required.

Claims 1-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Independent claims 1, 2, 16 and 31 recite that the bowl bottom is in fluid communication with the reservoir such that fluid rising within the cup may overflow into the reservoir. This appears to suggest that the fluid passes directly from the cup to the reservoir. However, the fluid cup is disposed within the process bowl. Thus, it appears that the fluid overflowing the cup passes first into the bowl in which the cup is located and then through the bowl bottom into the reservoir.

The number of the claim upon which claim 6 depends is missing. Consequently, claim 6 is prima facie indefinite and has not been further considered.

Claims not individually addressed are rejected for the reason given with respect to the claim or claims from which they depend.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

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Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4 and 15-18^{and 31} rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster et al (5,000,827) in view of Kosaki (5,441,629).

The Schuster et al patent discloses apparatus for electrolytically plating a workpiece such as a semiconductor wafer. As shown in figure 7, the apparatus includes cylindrical cup 20 (column 4, lines 38-39) surrounded by enclosure 24 which may be considered a bowl into which the electrolyte overflows. Anode 40 is provided in the cup and an inlet is provided at the bottom of the cup.

Applicant's apparatus as recited in claims 1, 2 and 31 differs from that of Schuster et al by reciting that the bowl is in fluid communication with a reservoir, while claim 16 additionally differs by reciting a plurality of cups and bowls. Kosaki discloses apparatus for electroplating which may include a plurality of plating cups. See figure 14. Each of the plating cups is connected to common reserve tank 77. Separate pumps and control valves are provided for each plating cup.

The prior art of record is indicative of the level of skill of one of ordinary skill in the art. It would have been obvious at the time the invention was made to have

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provided a plurality of plating cups in the apparatus of Schuster et al and to have utilized a common reservoir to supply all of the cups because throughput of the apparatus would have been increased by using multiple cups and all cups would be efficiently supplied with electrolyte as taught by Kosaki.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster et al (5,000,827) in view of Kosaki (5,441,629) as applied to claims 1-4 and 15-18 above, and further in view of Sein et al (5,242,571).

Claim 10 additionally differs from the apparatus of Schuster by reciting that the reservoir is a double walled vessel. The Sein et al patent is directed to apparatus for electrolytic production of copper wire. The wire is passed a plurality of time through tank 10 which contains the electrolyte. Sein et al teach that a double walled tank enables the electrolyte leaking out to be trapped in the double wall and recycled. See column 4, lines 52-55. It would have been obvious at the time the invention was made to have utilized a double walled reservoir in the apparatus suggested by Schuster and Kosaki because leaks would be contained as shown by Sein.

Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster et al (5,000,827) in view of Kosaki (5,441,629) as applied to claim 1, 2-4 and 15-18 above, and further in view of Kulkarni et al (4,933,061).

Claims 11-14 additionally differ from the apparatus of Schuster et al by

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reciting a flow sensor and flow controller which is responsive to the controller.

Kulkarni et al (4,933,061) is directed to electroplating apparatus which includes a plating tank and means to circulate the electrolyte. The pumping system includes flow sensor 87, flow meter 88 and appropriate valves so that the flow rate can be kept at a desired level. See column 4, lines 32-44. It would have been obvious to have included a flow sensor and flow controlling valves in the apparatus suggested by Schuster and Kosaki because the flow rate of the electrolyte would be maintained at a chosen level as taught by Kulkarni.

Claims 5, 7-9 and 19-30 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Claims 5 and 19 recite a filter disposed between the fluid inlet and the anode while claims 7-9 recite levelers. The prior art of record does not suggest the features recited in these claims or claims dependent thereon.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references cited in the corresponding PCT application are relevant to the claimed invention. EP 0 290 210 A2, directed to electroplating apparatus; EP 0 492 772 A1, directed to a recirculating chemical

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bath; patent abstracts of Japan vol 16, no. 431, abstract C0983 and vol. 18, nol 150, abstract C1179 which disclose plating apparatus.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to William Leader, whose telephone number is (703) 308-2530. The examiner can normally be reached Mondays-Thursdays from 8:00 AM to 5:00 PM eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathryn Gorgos can be reached at (703) 308-3328. The fax phone number for *official* after final faxes is (703) 305-3599. The fax phone number for all other *official* faxes is (703) 305-7718. Unofficial communications to the Examiner should be faxed to (703) 305-7719.

Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is (703) 308-0661.

Wt

William Leader:wtl
September 12, 1998


Kathryn Gorgos
Supervisory Patent Examiner
Technology Center 1700